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# UNITED STATES PATENT AND TRADEMARK OFFICE

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/939,638 | 08/28/2001 | Zhe-Hong Chen | 110468 | 4553 |

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OLIFF & BERRIDGE, PLC
P.O. BOX 19928
ALEXANDRIA, VA 22320

| EXAMINER |
|---|
| YE, LIN |

| ART UNIT | PAPER NUMBER |
|---|---|
| 2615 | |

DATE MAILED: 06/03/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

| | | Application No. | Applicant(s) |
|---|---|---|---|
| **Office Action Summary** | | 09/939,638 | CHEN ET AL. |
| | | Examiner | Art Unit |
| | | Lin Ye | 2615 |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

1)☒ Responsive to communication(s) filed on <u>07 March 2005</u>.

2a)☐ This action is **FINAL**.     2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

4)☒ Claim(s) <u>1-30</u> is/are pending in the application.

    4a) Of the above claim(s) <u>3,4,11,12,18,19,26 and 27</u> is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1,2, 5-10, 13-17, 20-25 and 28-30</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

## Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on <u>20 November 2001</u> is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☒ All   b)☐ Some *   c)☐ None of:

    1.☒ Certified copies of the priority documents have been received.

    2.☐ Certified copies of the priority documents have been received in Application No. _____.

    3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date <u>8/28/01 and 1/5/05</u>.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

# DETAILED ACTION

### *Response to Arguments of Election/Restrictions*

1. Applicant's election with traverse of the election of the species of Figure 8 which read on claims 1, 2, 5-10, 13-17, 20-25 and 28-30 in the reply filed on 3/7/05 is acknowledged. The traversal is on the ground(s) that applicants believe the election requirement causing unnecessary delay and expense to applicants and duplicative examination by the Patent Office. This is not found persuasive because the examiner made a ***prima facie*** showing of examining burden by pointing out the Species (Figure 7; Figure 8; Figure 9) are Patentably Distinct from each other. For examples, the methods of the steps of 3-8 of Figure 7 for showing the operation of the image processor to smoothing the target pixel are different from the methods of the steps of 3-8 of Figure 8 and the methods of the steps of 3-5 of Figure 9.

   **The requirement is still deemed proper and is therefore made Final.**

2. Claims 3-4,11-12, 18-19 and 26-27 withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected Species (Figure 7; Figure 9), there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement filed on 3/7/05.

### *Claim Rejections - 35 USC § 102*

3.  The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the

basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4.  Claims 1-2, 5-10, 13-17, 20-25 and 28-30 are rejected under 35 U.S.C. 102(e) as being

anticipated by Hamilton, Jr. et al. U.S. Patent 6,697,107.

Referring to claim 1, the Hamilton reference discloses in Figures 2-8, an image

processing apparatus (electronic still camera 1, See col.2, lines 52-63) for smoothing image

data that is formed by a plurality of pixels (two-dimensional array of pixels on the image

sensor 12) and includes at least one color component (See Col. 2, lines 14-18), comprising:

smoothing means for selectively performing, for at least one color component of a target

pixel (the center pixel of a 5x5 kernel as shown in Figure 4), smoothing that uses pieces of

color information of at least one color component of the target pixel and of pixels adjacent to

the target pixel among a plurality of pixels that form the image data (See Col.4, lines 60-67),

the smoothing done in accordance with correlation between the target pixel and pixels in the

vicinity of the target pixel (See Col. 6, lines 30-53).

Referring to claim 2, the Hamilton reference discloses in Figures 2-8, an image

processing apparatus (electronic still camera 1, See col.2, lines 52-63) for smoothing image

data that is formed by a plurality of pixels (two-dimensional array of pixels on the image

sensor 12) and includes at least one color component (See Col. 2, lines 14-18), comprising:

similarity degree calculating means (the blur block 42) for calculating similarity degrees

indicating similarity between a target pixel and pixels in the vicinity of the target pixel

among a plurality of pixels that form the image data (the blurred luminance value B33 as a

similarity degrees indicating similarity between the center pixel and pixels in the vicinity of

the center pixel, see Col. 5, lines 15-24); classifying means (classification block 48) for

classifying pixels whose similarity degrees have been calculated by the similarity degree

calculating means into one of a plurality of groups having different similarity degree features

(See Col. 5, lines 25-65 and Col. 6, lines 1-20); and smoothing means for selecting a pixel to

be subjected to smoothing from among a pixel that has been classified into a particular group

in the plurality of groups and pixels in the vicinity of the pixel that has been classified into

the particular group, and for performing smoothing on color information of at least one color

component of the selected pixel by using pieces of color information of at least one color

component of the selected pixel and of pixels adjacent to the selected pixel (See Col. 6, lines

21-45).

Referring to claim 5, the Hamilton reference discloses wherein said smoothing means

smoothes color information of a color component of a pixel that is adjacent to a plurality of

pixels that have been classified into the particular group by the classifying means (See Col. 6,

lines 37-45).

Referring to claim 6, the Hamilton reference discloses wherein said smoothing means

uses, as said particular group, a group having a feature that similarity degrees calculated in at

least two different directions by the similarity degree calculating means are approximately

the same (the group is classified as "flat" shown in Figure 7C. the similarity degree of

vertical and horizontal directions are approximately the same, See Col. 6, lines 20-23).

Referring to claim 7, the Hamilton reference discloses wherein said smoothing means

judges that similarity degrees in at least two different directions are approximately the same

when a difference between similarity degrees calculated in the at least two different

directions by the similarity degree calculating means is smaller than a prescribed threshold

value (less than a fixed threshold, such as 24, See Col. 6, lines 20-23).

Referring to claim 8, the Hamilton reference discloses all subject matter as discussed with

respected to same comment as with claim 2, and the Hamilton reference discloses

interpolating means for interpolating pieces of color information of a color component that is

absent from pixels that are arranged at a prescribed pitch among pixels that form the image

data (See Col. 4, lines 28-32); similarity degree calculating means for calculating similarity

degrees in at least two different directions for each pixel to be a subject of interpolation by

the interpolating means (See Col. 5, lines 20-25).

Referring to claim 9, the Hamilton reference discloses said smoothing means performs

the smoothing parallel with the interpolation by the interpolating means (as shown in figure

2, the digital signal processor 22 performs the interpolation and smoothing together, see col.

4, lines 29-30 and Col. 6, lines 45-65).

Referring to claim 10, the Hamilton reference discloses wherein said interpolating means

employs, as subjects of the interpolation, pixels that miss a color component having a highest

spatial arrangement density; and said smoothing means smoothes color information of the

color component having the highest spatial arrangement density of a pixel adjacent to a pixel

that has been classified into the particular group (see col. 4, lines 29-30 and Col. 6, lines 45-65).

Referring to claim 13, the Hamilton reference discloses all subject matter as discussed with respected to same comment as with claim 5.

Referring to claim 14, the Hamilton reference discloses all subject matter as discussed with respected to same comment as with claim 6.

Referring to claim 15, the Hamilton reference discloses all subject matter as discussed with respected to same comment as with claim 7.

Referring to claim 16, the Hamilton reference discloses all subject matter as discussed with respected to same comment as with claim 1, and the Hamilton reference discloses a storage medium in which an image processing program is stored (See Col. 6, lines 66-67).

Referring to claim 17, the Hamilton reference discloses all subject matter as discussed with respected to same comment as with claim 2, and the Hamilton reference discloses a storage medium in which an image processing program is stored (See Col. 6, lines 66-67).

Referring to claim 20, the Hamilton reference discloses all subject matter as discussed with respected to same comment as with claim 5.

Referring to claim 21, the Hamilton reference discloses all subject matter as discussed with respected to same comment as with claim 6.

Referring to claim 22, the Hamilton reference discloses all subject matter as discussed with respected to same comment as with claim 7.

Referring to claim 23, the Hamilton reference discloses all subject matter as discussed with respected to same comment as with claim 8, and the Hamilton reference discloses a storage medium in which an image processing program is stored (See Col. 6, lines 66-67).

Referring to claim 24, the Hamilton reference discloses all subject matter as discussed with respected to same comment as with claim 9.

Referring to claim 25, the Hamilton reference discloses all subject matter as discussed with respected to same comment as with claim 10.

Referring to claim 28, the Hamilton reference discloses all subject matter as discussed with respected to same comment as with claim 5.

Referring to claim 29, the Hamilton reference discloses all subject matter as discussed with respected to same comment as with claim 6.

Referring to claim 30, the Hamilton reference discloses all subject matter as discussed with respected to same comment as with claim 7.

### *Conclusion*

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

   a. Addison et al. U.S 5,990,950 discloses a method uses predictor sets for each missing intensity values to select a vest value for each missing intensity value.

   b. Okisu U.S. 6,091,862 discloses the pixel weight factors are used in the pixel interpolation calculation to improve the interpolated result.

6.  Any inquiry concerning this communication or earlier communications from the examiner

should be directed to Lin Ye whose telephone number is (571) 272-7372. The examiner can

normally be reached on Mon-Fri 8:00AM-5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, James J. Groody can be reached on (571) 272-7950. The fax phone number for

the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent

Application Information Retrieval (PAIR) system. Status information for published

applications may be obtained from either Private PAIR or Public PAIR. Status information

for unpublished applications is available through Private PAIR only. For more information

about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access

to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197

(toll-free).

Lin Ye
Examiner
Art Unit 2615

November 23, 2004